3 Year PhD Studentship available for September 2019

**Department:** Leicester Diabetes Centre & Health Sciences

**Supervisors:**
- Dr Clare Gillies (Leicester Diabetes Centre) clg13@le.ac.uk
- Prof Kamlesh Khunti (Leicester Diabetes Centre) kk22@le.ac.uk
- Prof Keith Abrams (Health Sciences) keith.abrams@le.ac.uk
- Dr Francesco Zaccardi (Leicester Diabetes Centre) fz43@le.ac.uk

**Eligibility:** UK/EU applicants only

**Project Title:** Evaluation and development of methodologies for using real world evidence to investigate the results of randomised controlled trials

**Project Description:**
In making treatment decisions clinicians must take into account evidence from relevant randomised controlled trials (RCTs). There is concern that external validity of RCT results are often poor, with results lacking generalisability to patient populations outside of an RCT setting, a perception that has led to underuse of treatments that are effective. (1) Unfortunately the results of RCTs will never be relevant to all patients and all settings, and hence the effectiveness of clinical interventions using real world evidence is becoming increasingly important for informing clinical practice. High-quality evidence for decisions for patient care can include data from systematic reviews, experimental trials, and observational research. Observational studies are increasingly playing an important role in decision-making for patients, health care professionals and policy makers including for management of diabetes. Notably, real-world data have shown the effects of therapies in populations not represented in randomised controlled trials. A particularly important diabetes subpopulation not represented in clinical trials is the older adult population that has been directly excluded due to age cut-offs or indirectly excluded because they have comorbidities. Real world data have frequently demonstrated an “efficacy to effectiveness gap” in comparison to the results of randomized clinical trials, even when demographics of the observed populations are similar. Key reasons for differences observed include the clinical heterogeneity of populations, including variable co-morbidities, length of follow up, adherence to therapies, and inertia in starting and advancing treatments. (2) For this proposal we plan to use the example of DPP4 inhibitors, SGLT-2 inhibitors and GLP-1 receptor agonist treatments for people type 2 diabetes, to investigate and expand on methodologies for comparing results from RCTs with real world evidence. (3-5) The real world data will consist of a cohort from the Clinical Practice Research Datalink (CPRD). CPRD is an ongoing primary care database of anonymised medical records from general practitioners, with coverage of approximately 11.3 million patients.

The aims of the PhD will be to:
i) Evaluate and expand on methods for matching an RCT sample (both at the IPD and the cohort level) with a sample from CPRD, to see if trial results are replicated in a matched real-world cohort

ii) Determine reasons for the efficacy to effectiveness gap

iii) Evaluate and expand on methods for re-weighting trial results, where the patient group is often very selective, to assess the potential treatment results in a broader UK population.

iv) Evaluate and expand on methods for selecting participants from CPRD who represent those included in the RCTs, and compare their treatment results to those who were not included in the RCTs.

The PhD will be based within the Real World Evidence unit at the Leicester Diabetes Centre and the HDR UK Research Facility.

References:

1. Rothwell, P.M. External validity of randomised controlled trials: “To whom do the results of this trial apply?”, The Lancet (2005) Volume 365, Issue 9453, pp 82-93


Funding details:
The College of Life Sciences (CLS) HDRUK Studentship will provide a tax-free stipend at RCUK rates (£15,009 for 2019/20) and UK/EU fees for 3 years.

Entry requirements:
Applicants are required to hold/or expect to obtain a data science related UK Bachelor Degree 2:1 or better (e.g. Computer Science, Bioinformatics, Biostatistics), and preferably also a similar MSc qualification. The University of Leicester English language requirements apply where applicable.

How to apply:
You should submit your application using our online application system.

Apply for a PhD in Health Sciences Research

In the funding section of the application please indicate you wish to be considered for a CLS
HDRUK Studentship

In the proposal section please provide the name of the supervisor and project you want to be considered for – please list both your first and second choices.

Project / Funding Enquiries: Dr Clare Gillies, clg13@le.ac.uk, 0116 258 8916.

Application enquiries to pgradmissions@le.ac.uk

Closing date for applications: 3rd April 2019

Interviews are likely to be week commencing 8th or 15th April 2019